



GRADE 6 ACHIEVEMENT TEST

Science

June 1990

Alberta
EDUCATION

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GRADE 6 ACHIEVEMENT TEST

SCIENCE

GENERAL INSTRUCTIONS

1. You have one hour to complete this test.
2. There are 60 multiple-choice questions on this test.
3. Please read each question carefully.
4. Choose the **correct** or **best** answer.
5. Use only an HB pencil.
6. Mark your answer on the separate answer sheet by filling in the circle under the correct letter (A, B, C, or D).
7. Be sure that the number beside the response circles on the answer sheet matches the number of the question you are answering.

Example

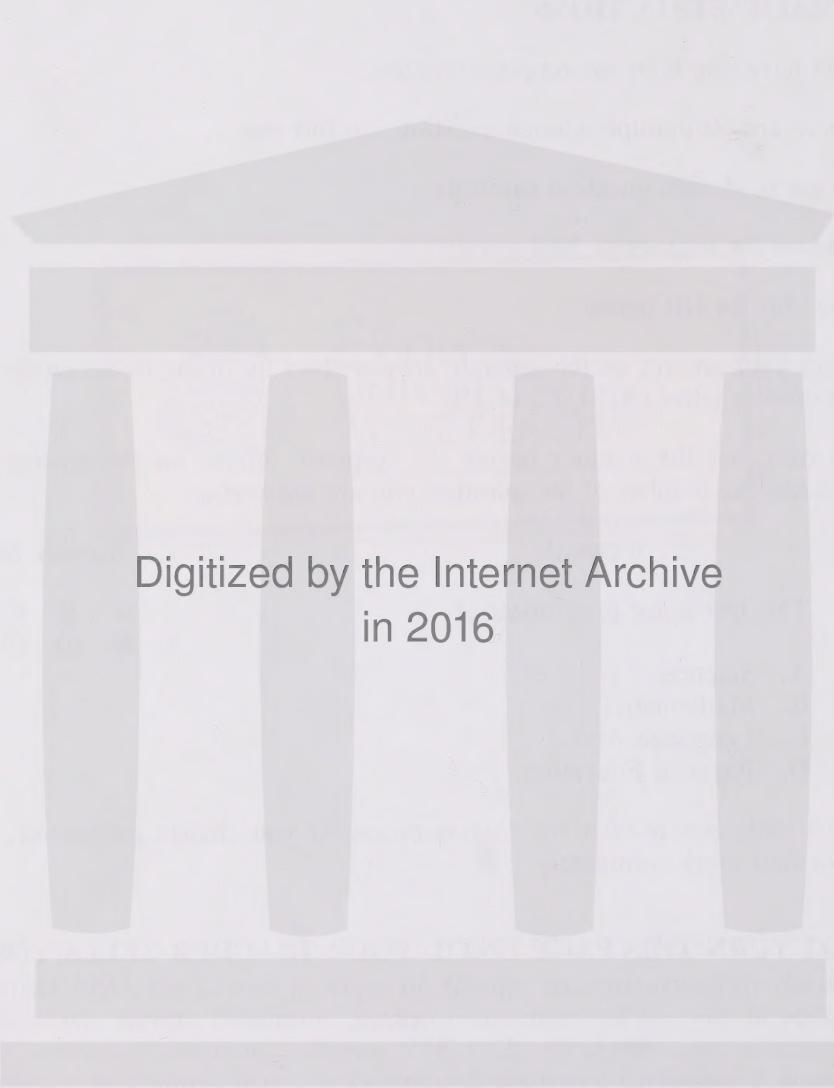
1. This test is for the subject of
 - A. Science
 - B. Mathematics
 - C. Language Arts
 - D. Physical Education
8. Mark only one answer for each question. If you change an answer, erase your first mark completely.

Answer Sheet

1. A B C D
1.

DO NOT TURN THIS PAGE UNTIL YOUR TEACHER TELLS YOU TO DO SO.

JUNE 1990



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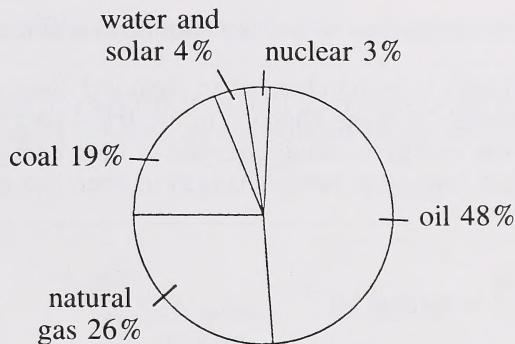
https://archive.org/details/achievementtestg00albe_5

1. In many situations, solar energy is a better form of energy than other forms because it is
 - A. efficient in any climate
 - B. available all day long
 - C. nonrenewable
 - D. nonpolluting

2. Which source of energy produces a waste product that must be stored very carefully?
 - A. Wind
 - B. Solar
 - C. Nuclear
 - D. Hydroelectric

Use the following information to answer question 3.

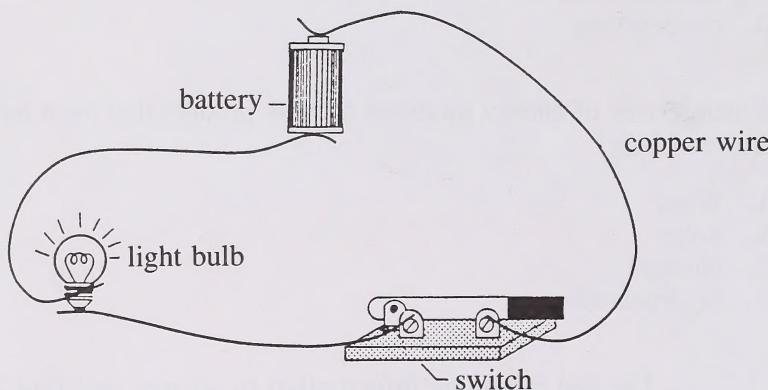
The circle graph shows the percentage of energy supplied by each resource.



3. What percentage of energy is supplied by nonrenewable resources?
 - A. 45%
 - B. 70%
 - C. 74%
 - D. 96%

Use the following information to answer question 4.

The diagram shows a closed circuit.



4. During an investigation with this equipment, a student should **infer** that

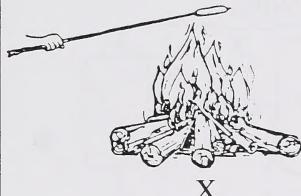
- A. heat energy is being changed to chemical energy
- B. light energy is being changed to electrical energy
- C. electrical energy is being changed to light energy
- D. electrical energy is being changed to chemical energy

5. Less energy is wasted by

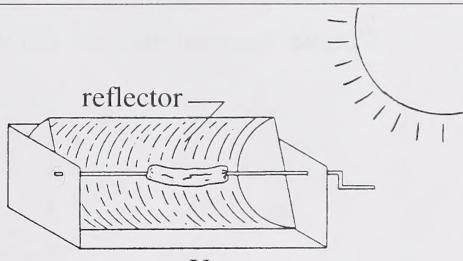
- A. boiling a kettle full of water to make one cup of tea
- B. doing the laundry in warm water instead of hot water
- C. leaving the car motor on while doing some shopping
- D. leaving the fridge door open to cool the house in hot weather

Use the following information to answer question 6.

Look at picture X and picture Y.



X



Y

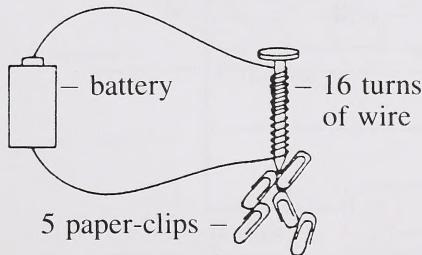
6. One advantage of cooking with the energy source shown in picture Y over the energy source shown in picture X is that

- A. X is renewable
- B. Y is nonrenewable
- C. X cannot be used up
- D. Y cannot be used up

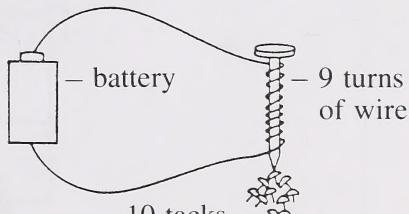
Use the following information to answer question 7.

Jack and Tina did an experiment to test their hypothesis that the strength of an electromagnet depends on the number of turns of wire around it.

Trial 1



Trial 2

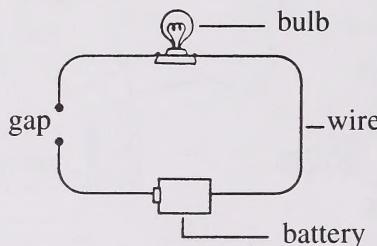


7. To test their hypothesis properly, Jack and Tina should have used

- A. different nails
- B. more batteries
- C. tacks or paper-clips in both trials
- D. the same number of turns of wire

Use the following information to answer question 8.

Christa designed an open electrical circuit.

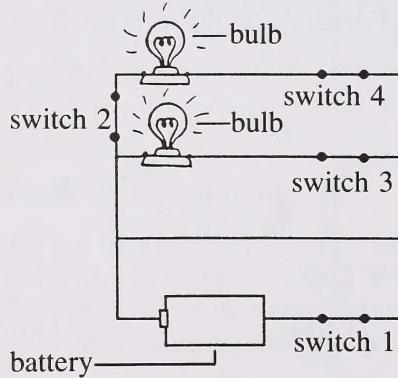


8. Which object can be placed across the gap to close the circuit?

- A. Wooden spoon
- B. Rubber band
- C. Yarn
- D. Nail

Use the following information to answer question 9.

Jerry constructed an electrical circuit as shown in the diagram.

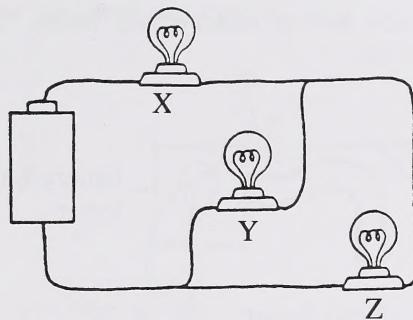


9. To turn off both bulbs, which switch should Jerry open?

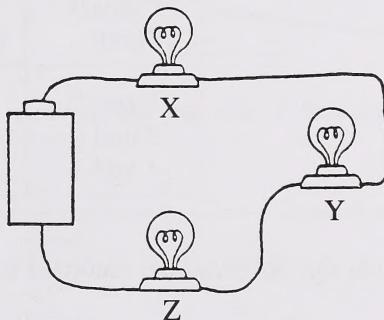
- A. 1
- B. 2
- C. 3
- D. 4

10. In which circuit should bulb X remain lighted if **both** bulbs Y and Z burned out?

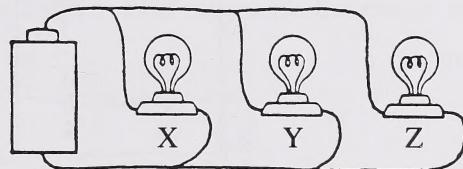
A.



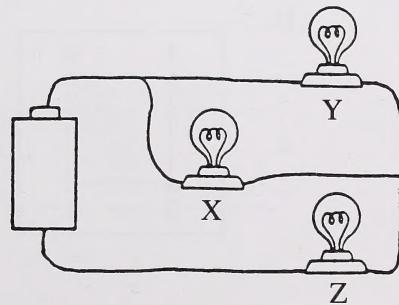
B.



C.

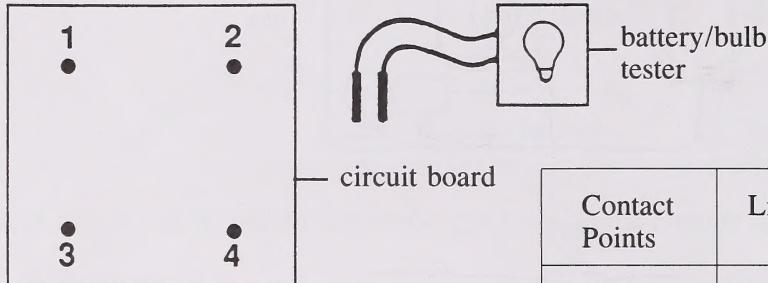


D.



Use the following information to answer question 11.

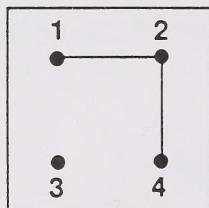
This circuit puzzle was tested with a battery/bulb tester. The chart shows some of the observations.



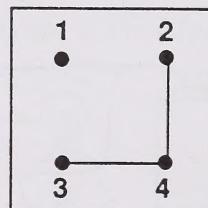
Contact Points	Lights Up
1 and 2	yes
3 and 2	yes
4 and 2	no

11. Which circuit model could provide the observations recorded in the chart?

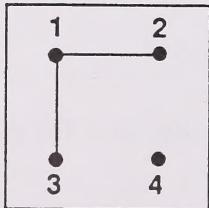
A.



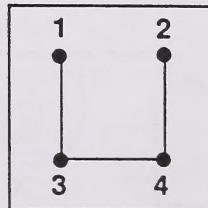
B.



C.

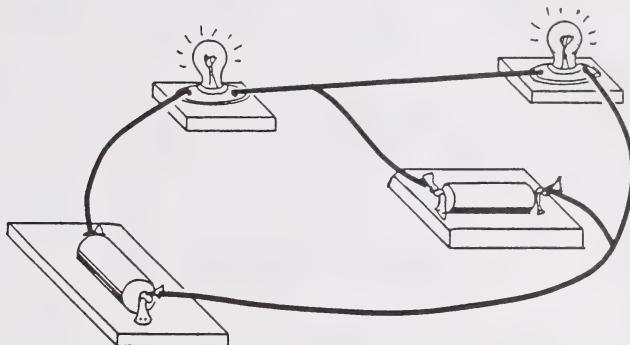


D.



Use the following information to answer question 12.

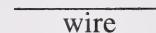
Fiona designed this circuit.



She decided to use the following symbols to make a diagram of the circuit:



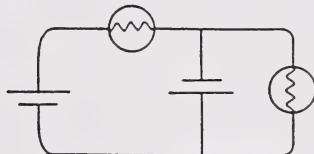
battery



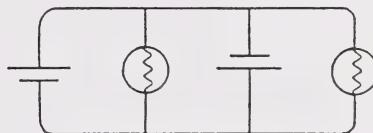
bulb

12. Which diagram **best** represents the circuit that Fiona designed?

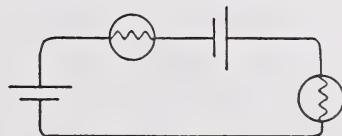
A.



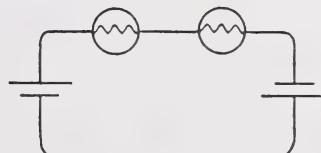
B.



C.

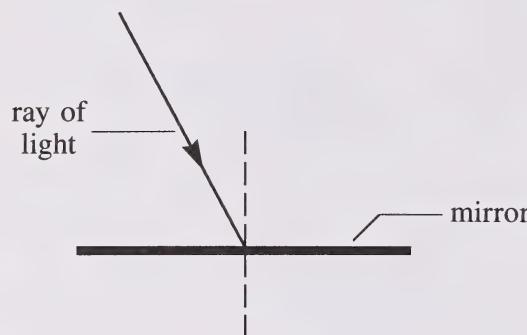


D.



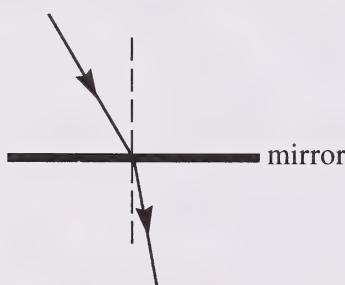
Use the following information to answer question 13.

A ray of light falls upon a flat mirror.

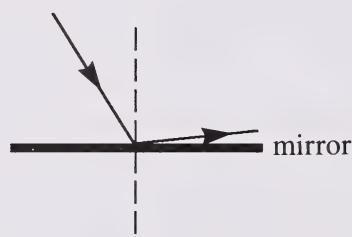


13. The diagram that shows what will happen to the ray of light after it contacts the mirror is

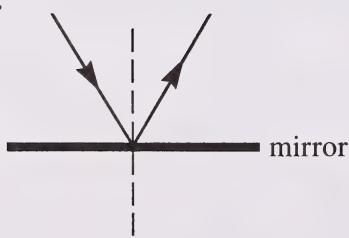
A.



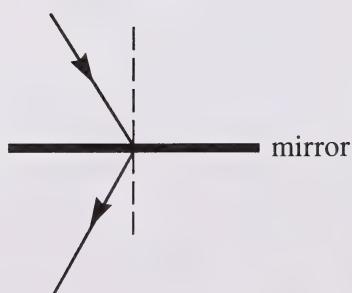
B.



C.

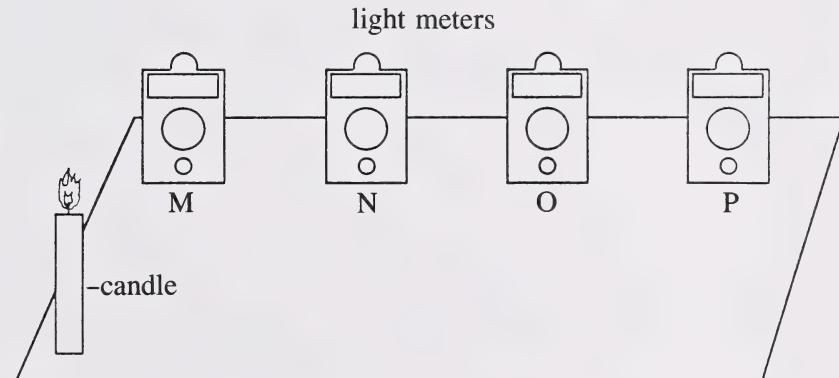


D.



Use the following information to answer question 14.

A candle is placed in a dark room and its light energy is measured by four light meters, M, N, O, and P.

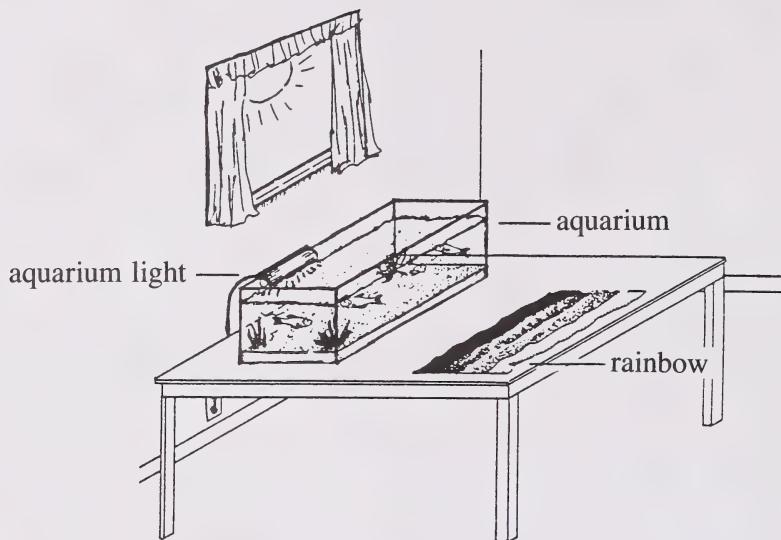


14. Which of the following statements is **most** likely true?

- A. Light meter M measures the least amount of light.
- B. Light meter P measures the greatest amount of light.
- C. Light meter N measures more light than M but less light than O.
- D. Light meter O measures less light than N but more light than P.

Use the following information to answer question 15.

Michael observed a rainbow (light spectrum) on the table near his aquarium. He inferred that the aquarium light caused the rainbow. However, when Michael turned the aquarium light off, the rainbow remained.



15. The **best** explanation for the rainbow is that it was caused by

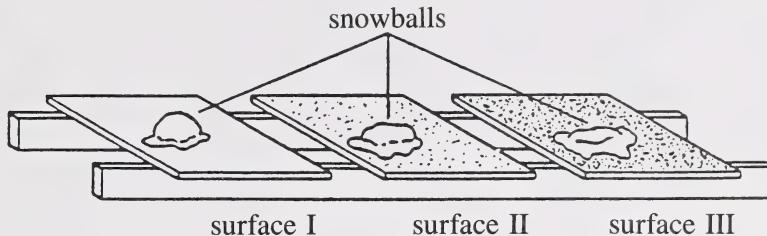
- A. the aquarium light and sunlight
- B. sunlight passing through the aquarium
- C. the aquarium light passing through the aquarium
- D. the aquarium light reflecting off the bottom of the aquarium

16. The term that **best** describes the gaseous form of water is

- A. steam
- B. dew
- C. rain
- D. fog

Use the following information to answer question 17.

Brock placed a snowball of equal size on each of the three surfaces shown. He left them in the sun for 10 minutes and observed the changes.



17. The best inference that can be made is that

- A. surfaces I, II, and III reflect energy equally
- B. surface II reflects less energy than surfaces I or III
- C. surface I reflects more energy than surfaces II or III
- D. surface II reflects more energy than surfaces I or III

Use the following information to answer question 18.

One morning, Patricia tossed a beach ball into a pail. When she returned in the hot afternoon, she had difficulty removing the beach ball from the pail.



18. The best explanation for this is that the

- A. ball and pail had expanded
- B. ball and pail had contracted
- C. ball had expanded more than the pail
- D. pail had contracted more than the ball

Use the following information to answer question 19.

Stephanie observes four changes that can occur in matter:

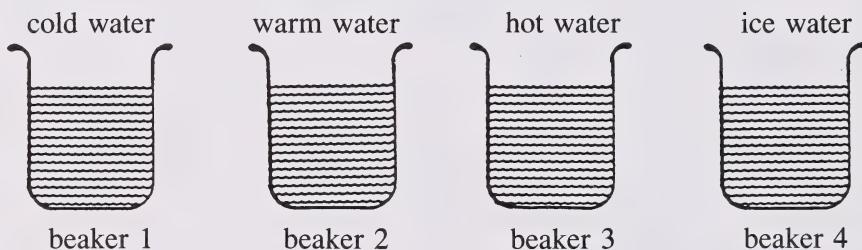
1. Paper becomes ash when it is burned.
2. Wax melts when it is heated.
3. Water evaporates from a puddle on a sidewalk.
4. Steel wool turns brown when it rusts.

19. Which of the changes that Stephanie observes are **reversible**?

- A. 3 and 4
- B. 2 and 3
- C. 1 and 3
- D. 1 and 2

Use the following information to answer question 20.

Equal amounts of water were placed in each of four beakers. The beakers were kept at different temperatures.

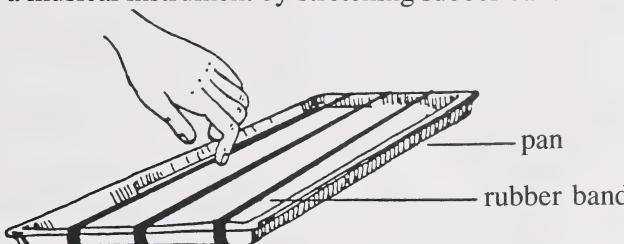


20. After one day, which beaker would have the **least** amount of water in it?

- A. Beaker 1
- B. Beaker 2
- C. Beaker 3
- D. Beaker 4

Use the following information to answer question 21.

Len made a musical instrument by stretching rubber bands across a pan.



21. The sound produced by Len's instrument **does not** depend on the

- A. size of the pan
- B. color of the pan
- C. tightness of the elastic
- D. material the pan is made from

Use the following information to answer question 22.

The closer the thunderstorm, the sooner that thunder is heard after a lightning flash. Sally noted both the time of day when she saw a lightning flash and the time that passed between the lightning flash and when she heard the thunder. The chart shows Sally's observations:

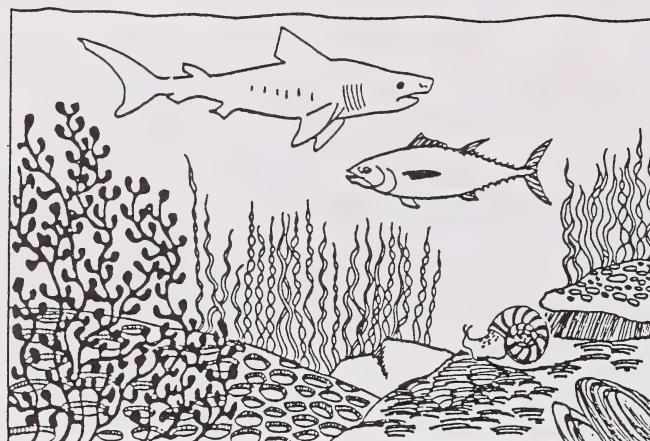
Time of Day (p.m.)	Time between Lightning and Thunder in Seconds (s)
9:00	12
9:05	8
9:10	4
9:15	9
9:20	13

22. According to the information in the chart, how did the thunderstorm travel while Sally was observing it?

- A. It moved steadily away.
- B. It moved steadily closer.
- C. It came closer and then moved away.
- D. It moved away and then came closer.

Use the following information to answer question 23.

A Sample of an Ocean Ecosystem



23. The producer in this ocean ecosystem is the

- A. tuna
- B. snail
- C. shark
- D. seaweed

24. An example of a nonliving part of an ecosystem is

- A. moss
- B. mold
- C. water
- D. bacteria

Use the following information to answer question 25.

Rabbits were introduced into Australia in the 1850s. Rabbits and sheep eat grass, but rabbits reproduce more quickly than sheep.

25. From this information, what is the **best** prediction that can be made?

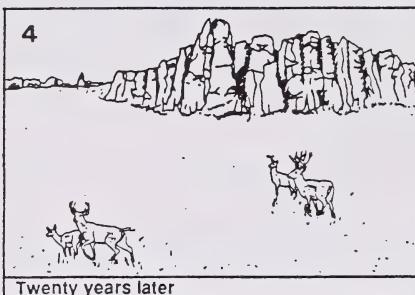
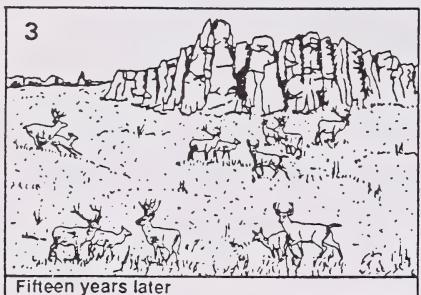
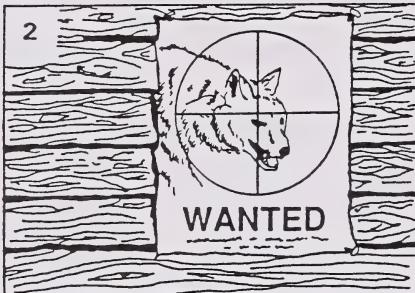
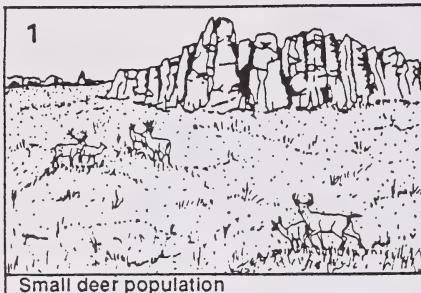
- A. The sheep will start eating the rabbits.
- B. The rabbits will stop reproducing so quickly.
- C. The sheep will start reproducing more quickly.
- D. There will not be enough grass to feed the animals.

26. The number of ducks in a marshy area in Alberta has decreased. Which of the following is the **most** likely cause of this change?

- A. The hunting season was shortened.
- B. The rainfall was higher than usual.
- C. The marsh was sprayed to reduce the number of mosquitoes.
- D. The previous winter was cold and very snowy but unusually short.

Use the following information to answer question 27.

Deer Population — A Sequence of Events

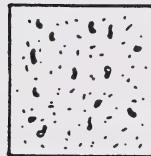


27. The **best** inference that can be made from the pictures is that the deer population declined between the years referred to in picture 3 and picture 4 because

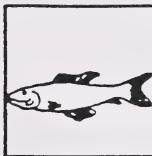
- A. the deer got too old and died
- B. the deer produced too many offspring
- C. wolves have no effect on the deer population
- D. there were too many deer for the food available

Use the following information to answer question 28.

Look at the food chain.



plankton



fish



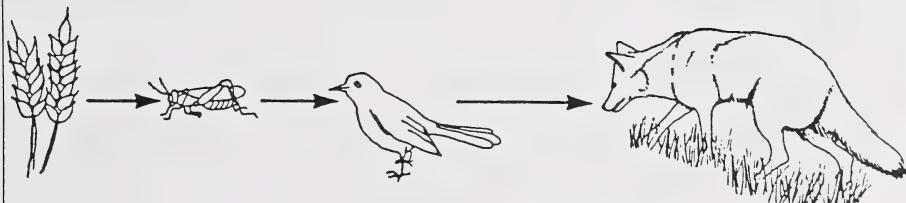
people

28. The sun is important to the food chain because it provides energy to

- A. water so that it remains clear
- B. people so that they can eat the food
- C. plankton so that they can produce food
- D. fish so that they can consume plankton

Use the following information to answer question 29.

Food Chain



29. The coyote eating the bird is an example of a

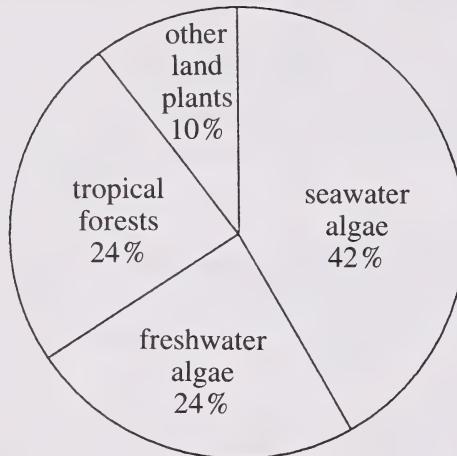
- A. predator-prey relationship
- B. predator-producer relationship
- C. producer-consumer relationship
- D. consumer-decomposer relationship

30. Which of the following shows a likely food chain?

- A. Dragonfly nymph → trout → mosquitoes → hawk
- B. Mosquitoes → dragonfly nymph → trout → hawk
- C. Dragonfly nymph → mosquitoes → hawk → trout
- D. Mosquitoes → dragonfly nymph → hawk → trout

Use the following information to answer question 31.

The circle graph shows the percentage of oxygen supplied to the atmosphere by each producer.



31. The supply of oxygen in the Earth's atmosphere would be **most** affected if pollution were to destroy

- A. other land plants
- B. freshwater algae
- C. tropical forests
- D. seawater algae

32. An essential function of adult insects is to

- A. migrate
- B. reproduce
- C. grow quickly
- D. end the life cycle

Use the following diagram to answer question 33.

An Imaginary Bird

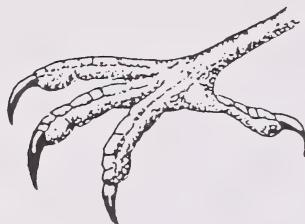


33. Based on this imaginary bird's physical characteristics, the **best** inference is that it

- A. wades along lake shores in search of food
- B. soars and glides on wind currents
- C. swims in ponds and marshes
- D. feeds on worms and grubs

34. Which bird's foot is **best** adapted for running?

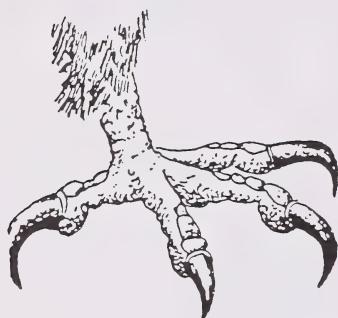
A.



B.



C.



D.



Use the following information to answer question 35.

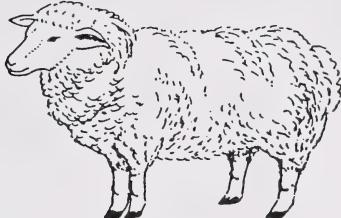
Ken placed two identical bee hives in the same field. The hives were supplied with equal numbers of bees but each hive was given a different type of bee.

35. The hypothesis that can be tested by this procedure is that honey production is dependent upon the

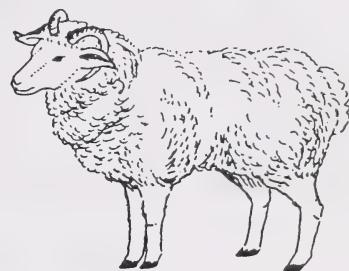
- A. number of bees
- B. type of crop
- C. type of hive
- D. type of bee

36. A farmer wants to select sheep that are not likely to jump the fences in the farmyard. Which sheep should the farmer select?

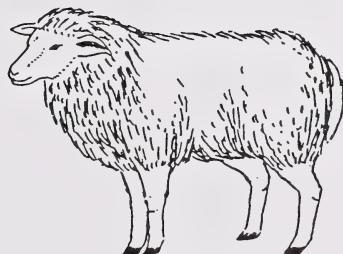
A.



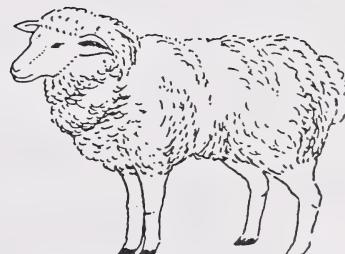
B.



C.

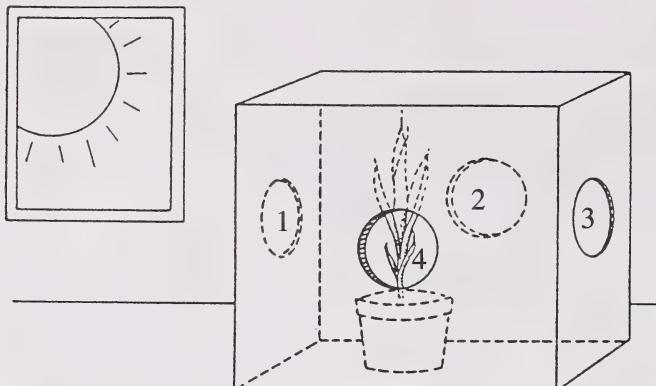


D.



Use the following information to answer question 37.

Ryan cut an identical hole in four sides of a large box. He placed the box over a plant as shown in the diagram.



37. Predict which hole the plant's leaves would face at the end of one week.

- A. 1
- B. 2
- C. 3
- D. 4

Use the following information to answer question 38.

A class found that a plant grew best under conditions of

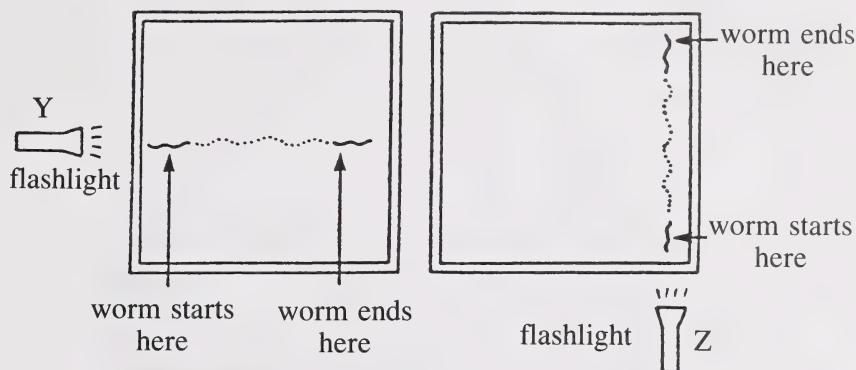
- high temperature
- light watering once every month
- bright sunlight.

38. In which of the following habitats would you **most** likely find this plant?

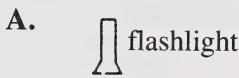
- A. Open desert area
- B. Tropical rain forest
- C. Alberta spruce forest
- D. High mountain meadow

Use the following information to answer question 39.

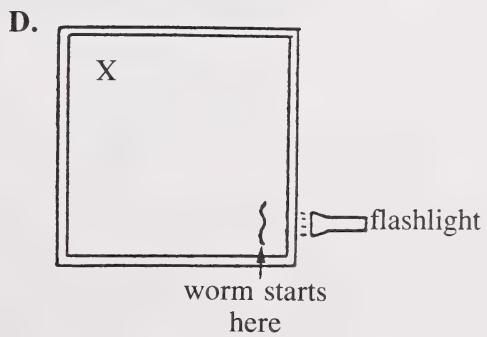
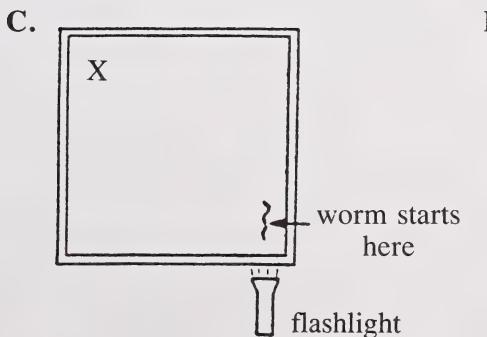
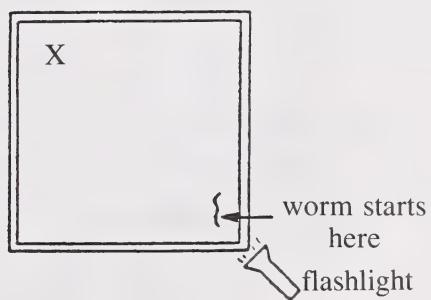
Sarah shone a flashlight on an earthworm and watched where the worm moved. The diagrams show from above what happened when she placed the flashlight at Y and at Z.



39. If Sarah wanted to move the worm to X, predict where the best place for her to position the flashlight would be.

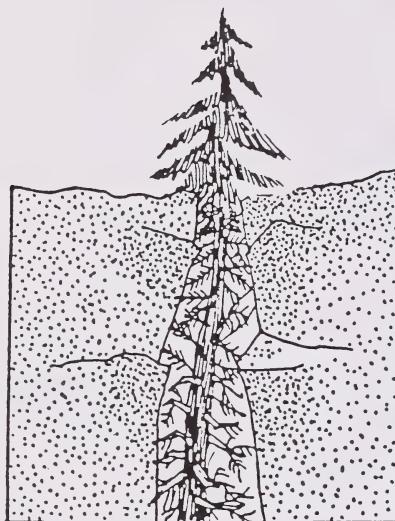


B.

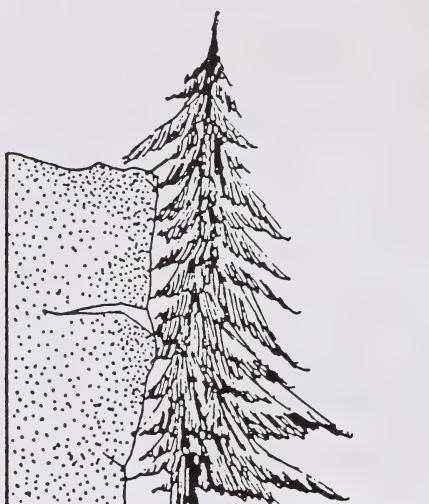


Use the following information to answer question 40.

Tree 1 is growing between two large rocks and tree 2 is growing beside one large rock.



tree 1



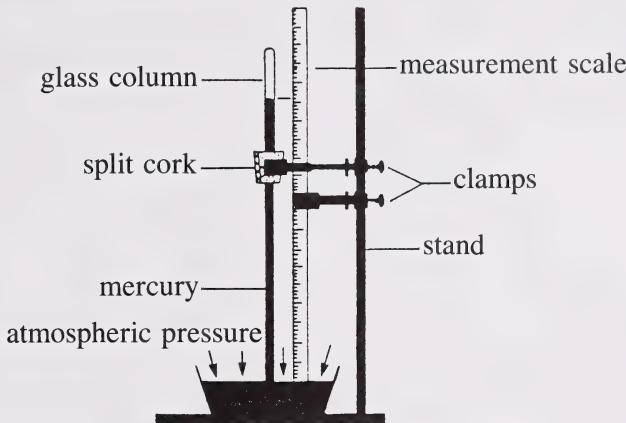
tree 2

40. Which of the following environmental factors **most** likely caused each tree to have a different shape?

- A. Light and space
- B. Soil and snowfall
- C. Moisture and insects
- D. Temperature and wind

Use the following diagram to answer question 41.

During the 17th century, Torricelli designed this instrument to demonstrate the presence of atmospheric pressure.

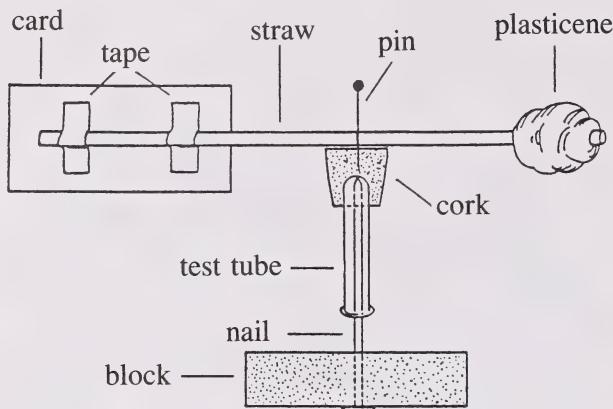


41. Torricelli's **operational definition** of atmospheric pressure could have been that atmospheric pressure is

- A. higher at sea level than on mountain tops
- B. read and determined in units of kilopascals
- C. measured using a scientific instrument such as the mercury or aneroid barometer
- D. air pressing on a liquid surface of mercury and forcing the mercury up a glass column

Use the following information to answer question 42.

Raja made this weather instrument.

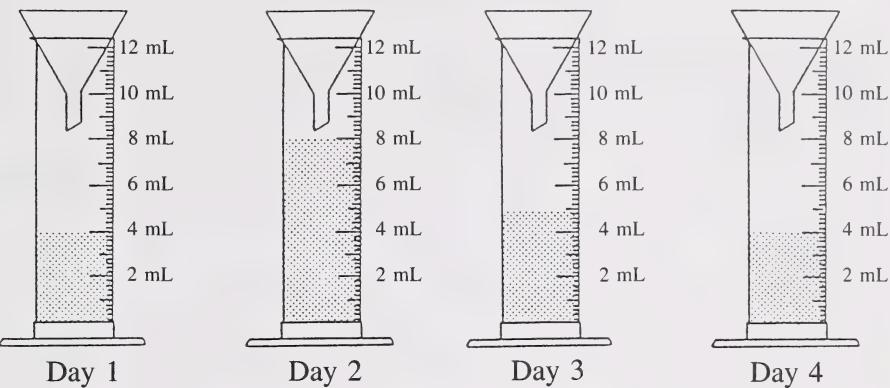


42. This instrument could be **best** used to measure

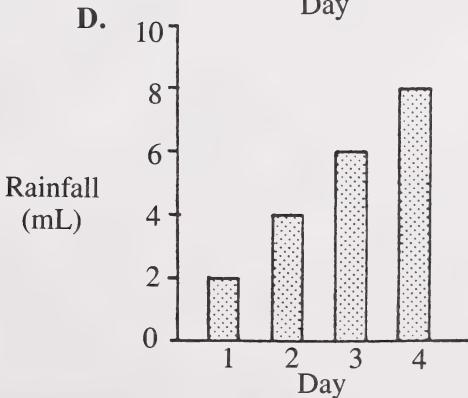
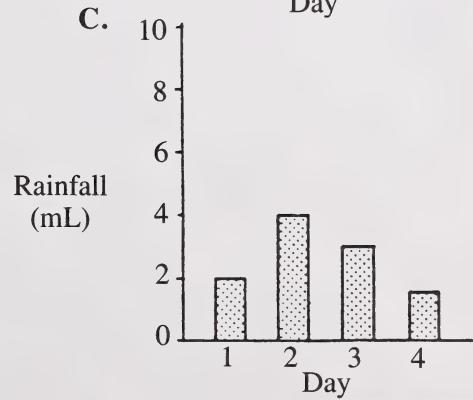
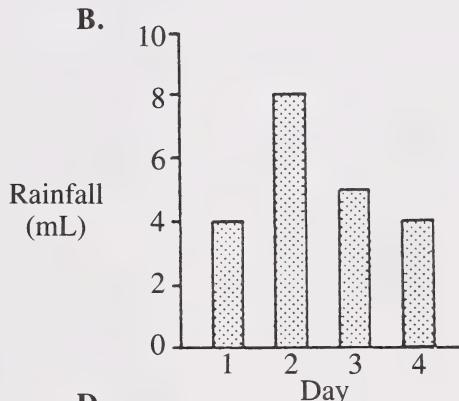
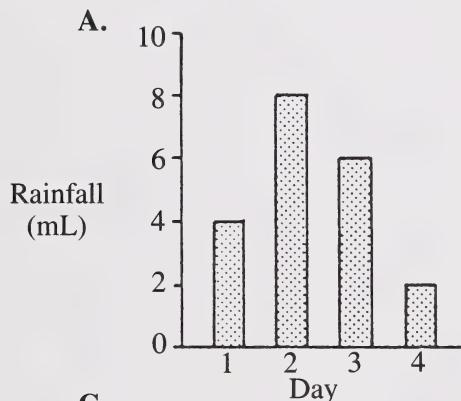
- A. wind speed
- B. air pressure
- C. air humidity
- D. wind direction

Use the following information to answer question 43.

Connie collected rainfall each day for four days.

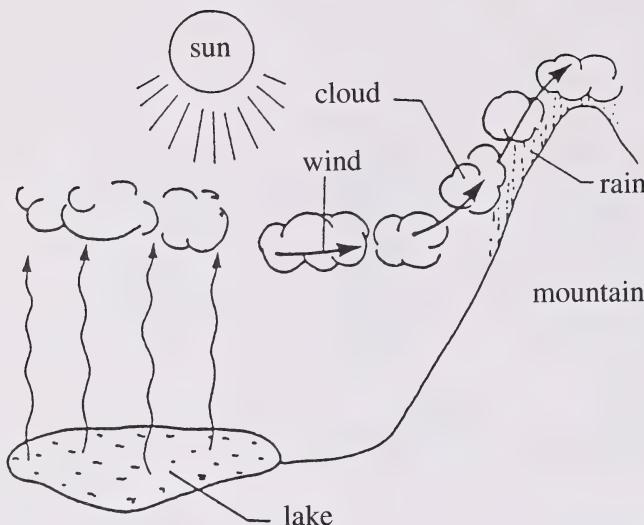


43. Which graph represents the amount of rainfall Connie collected for each of the four days?



Use the following information to answer question 44.

The Water Cycle

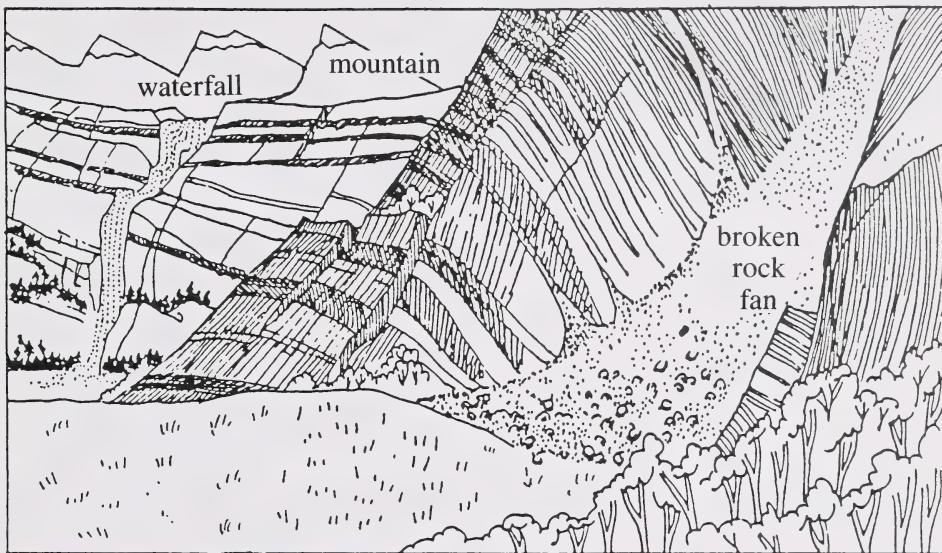


44. The source of energy for the water cycle is the

- A. sun
- B. lake
- C. wind
- D. mountain

Use the following picture to answer question 45.

Mountain Landscape



45. Predict which of the following changes would **most** likely appear after five hundred years.

- A. The waterfall would be lower.
- B. The mountain would be more pointed.
- C. The broken rock fan would be smaller.
- D. Trees would cover less of the mountain.

Use the following picture to answer question 46.



46. Scientists would **most** likely observe that the river water would be least polluted at the place marked in the picture with the letter

- A. W
- B. X
- C. Y
- D. Z

Use the following information to answer question 47.

Static Electricity Symbols

+	positive charge	↔	repel
-	negative charge	→←	attract
○	no charge (neutral)		

47. Which symbols show in **correct** order that unlike charges attract, like charges repel, and charged objects attract uncharged objects?

A. + →← −, + ↔ +, ○ →← ○

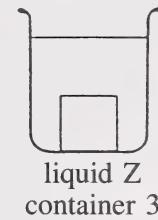
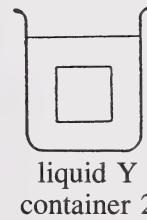
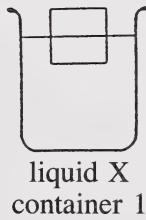
B. − →← +, − ↔ −, + →← ○

C. + →← ○, + →← +, ○ ↔ −

D. + →← −, + ↔ +, − →← +

Use the following information to answer question 48.

Jessica completed the following experiment. Into the first of three identical containers, she poured 500 mL of liquid X. She poured 500 mL of liquid Y into container 2 and 500 mL of liquid Z into container 3. Jessica then placed an ice cube in each container. The ice cubes were of equal size, shape, and mass. The diagrams show what occurred.



48. The **best** observation Jessica could make is that the ice cube floated in liquid

A. X but sank in liquid Z

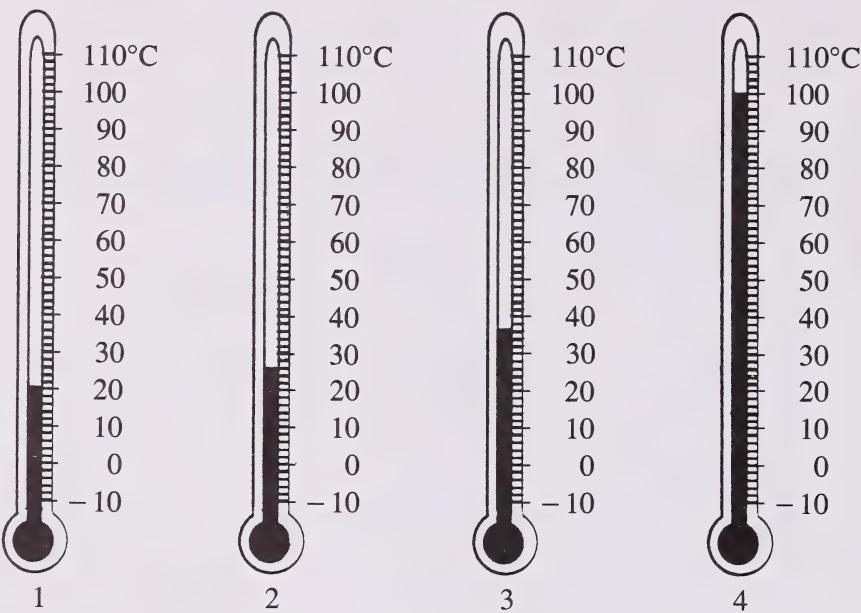
B. X but sank in liquid Y

C. Z but sank in liquid Y

D. Z but sank in liquid X

Use the following information to answer question 49.

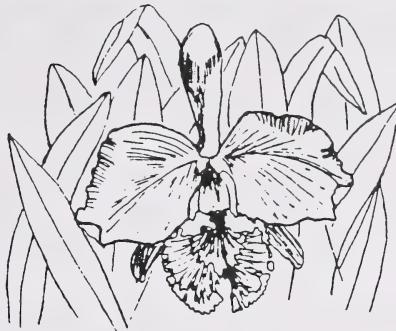
The temperature of four different objects is shown by thermometers 1, 2, 3, and 4.



49. Normal human body temperature is shown by thermometer

- A. 1
- B. 2
- C. 3
- D. 4

Use the following information to answer question 50.



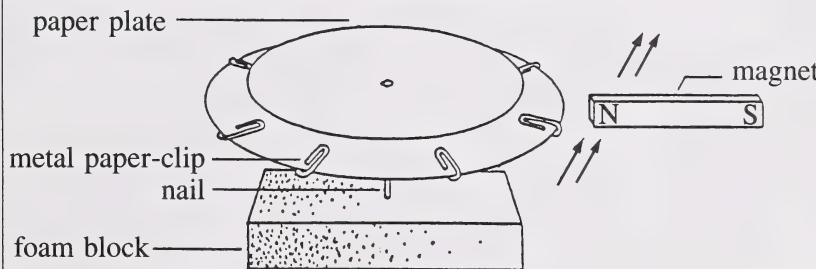
Word Part	Meaning
micro	small
macro	large
uni	one
poly	many
phylum	leaf
flora	flowers

50. What is the name of an orchid with many leaves?

- A. Orchid macrophyllum
- B. Microphyllum orchid
- C. Orchid polyphylum
- D. Polyflora orchid

Use the following information to answer question 51.

A magnet is moved past a paper plate as shown.

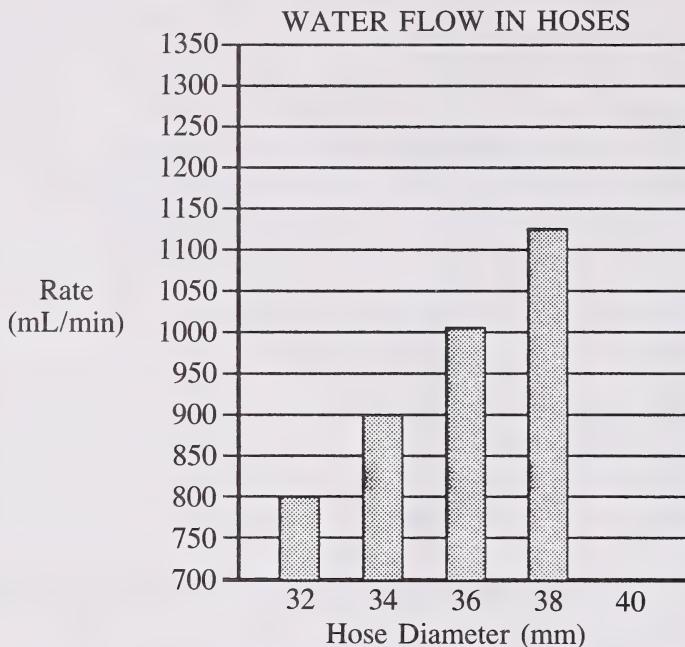


51. The **best** prediction of what will **most** likely happen is that the paper plate will

- A. rotate
- B. remain still
- C. repel the magnet
- D. fly off the foam block

Use the following information to answer questions 52 and 53.

Wendy measured the volume of water that flowed for one minute through hoses of different diameters. The graph shows the results.



52. The **best** prediction of the volume of water that will **most** likely flow through a 40 mm diameter hose for one minute is

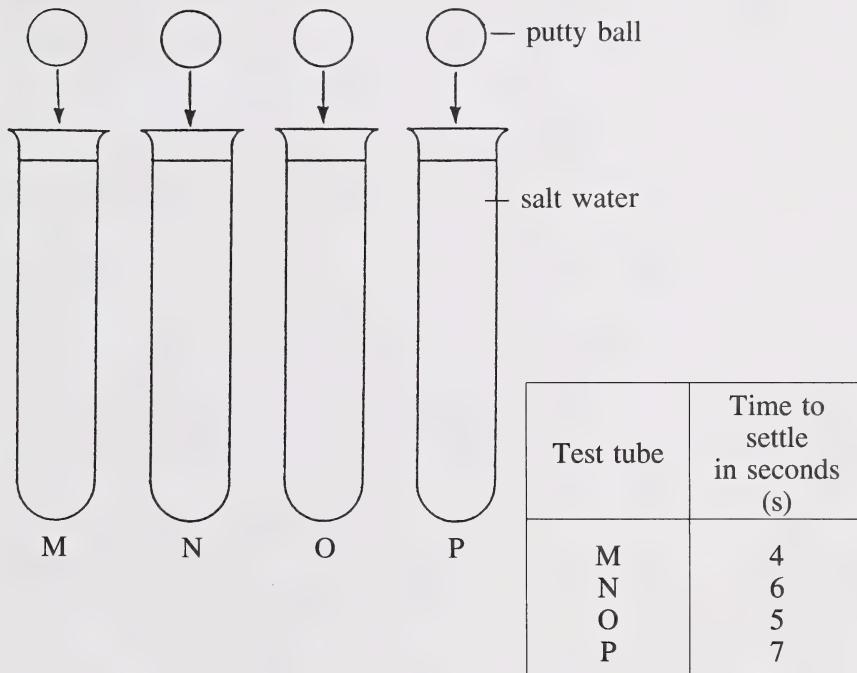
- A. 1150 mL
- B. 1250 mL
- C. 1325 mL
- D. 1350 mL

53. The fastest way to fill a bucket would be to use a hose that is

- A. long
- B. wide
- C. short
- D. narrow

Use the following information to answer question 54.

John set up four identical test tubes of water at the same temperature. Each contained different amounts of dissolved salt. Into each test tube John dropped an identical ball of putty. He recorded on a chart the time it took the putty to settle to the bottom of the test tube.

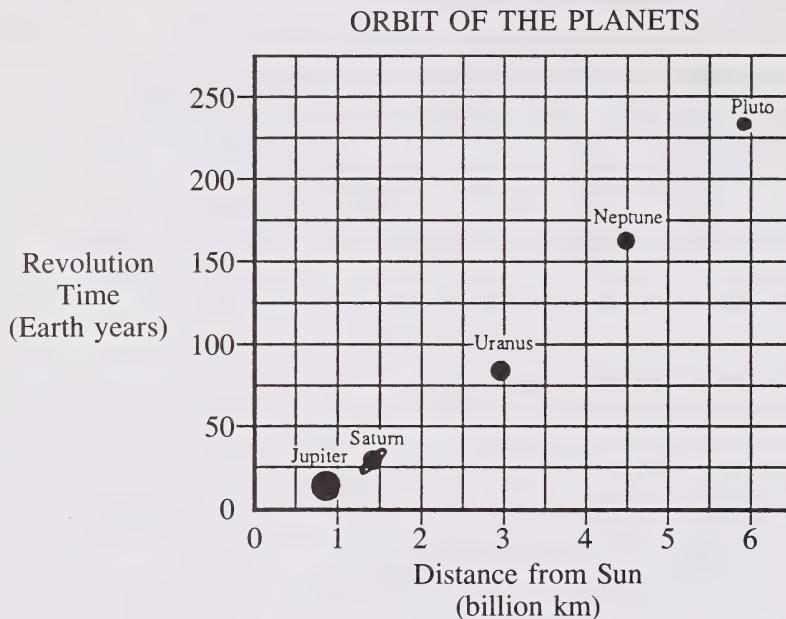


54. The variable that probably influenced the result shown on John's chart is the

- A. amount of salt
- B. mass of the putty balls
- C. temperature of the water
- D. diameter of the test tubes

Use the following information to answer question 55.

The graph represents the distance some planets are from the sun. It also shows the time it takes for these planets to revolve around the sun.



55. An interpretation that can be made from the graph is that the time taken to revolve around the sun is

- A. longer for larger planets
- B. shorter for smaller planets
- C. longer for planets that are farther from the sun
- D. shorter for planets that are farther from the sun

Use the following information to answer questions 56 and 57.

Kelly wanted to find out which kind of detergent foams the most when shaken in water. The chart presents the data collected:

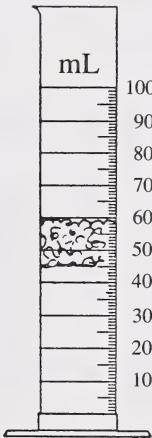
Kind of Detergent	Volume of Detergent (mL)	Volume of Water (mL)	Temperature of Water (°C)
Boffo	5	50	10
Socko	5	50	30
Sudso	5	50	50

56. Kelly's results for Boffo detergent are shown at the right. The volume of foam is

- A. 10 mL
- B. 15 mL
- C. 45 mL
- D. 60 mL

57. To improve this experiment, Kelly should use

- A. more water
- B. more detergent
- C. the same kind of detergent
- D. the same temperature of water



Use the following information to answer question 58.

Neil tested the hardness of three minerals by scratching one with another. He recorded his observations:

Mineral	Mineral(s) It Scratches	Mineral(s) That Scratch(es) It
calcite	none	topaz, feldspar
topaz	calcite, feldspar	none
feldspar	calcite	topaz

58. The minerals listed in order from softest to hardest are

- A. feldspar, calcite, topaz
- B. calcite, feldspar, topaz
- C. calcite, topaz, feldspar
- D. feldspar, topaz, calcite

Use the following information to answer question 59.

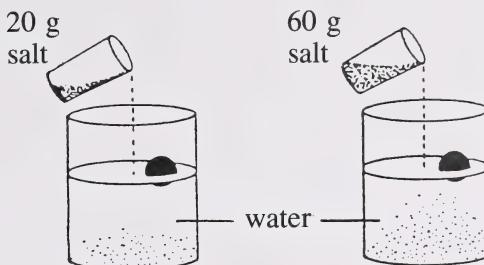
Candice wondered if Grade 6 girls run faster than Grade 6 boys. She decided to measure the time it would take her classmates to run a race.

59. The variable that would be **most** important for her to keep constant is the

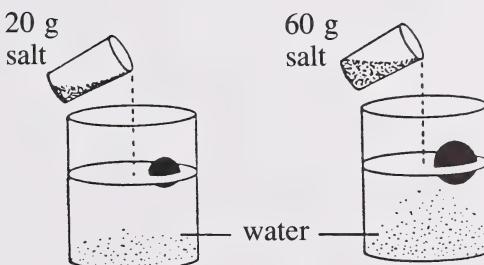
- A. length of the race
- B. time taken to run the race
- C. speed of the Grade 6 runners
- D. number of people timing the race

60. Mary wants to find out if the amount of salt added to water affects how high a ball will float in water. Which experimental design would be the best for her to use?

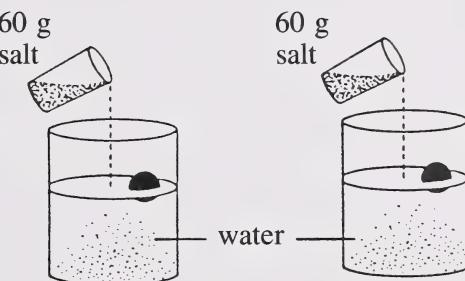
A.



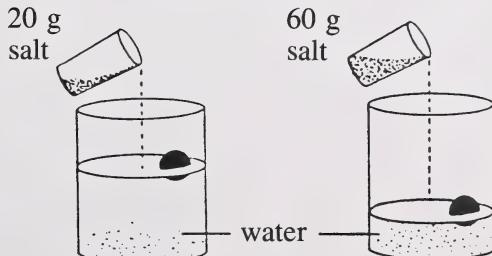
B.



C.



D.



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